LAC DU FLAMBEAU, WI
TOWER STANDARD LUST SITE
AREA OF VOCS ABOVE 500 µg/kg
IN SOIL ABOVE THE WATER TABLE

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907)563-0013 Fax (907)563-6713

DATUM: NAD83 PROJECTION: SP WI ZN FT Project No. 34170026	Date:	SHEET 1 of 1
	DWN. NAP	
	SCALE 1" = 45'	
	APPRVD. MF	

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EPA-R5-2017-010506_0000037

LAC DU FLAMBEAU, WI
TOWER STANDARD LUST SITE
EXTENT OF VOCS IN GROUNDWATER ABOVE 10 µg/L

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907)563-0013 Fax (907)563-6713

DATUM: NAD83	Date:	SHEET 1
PROJECTION: SP WI ZN FT	DWN. NAP	of
Project No. 34170026	SCALE 1" = 45'	1
	APPRVD. MF	

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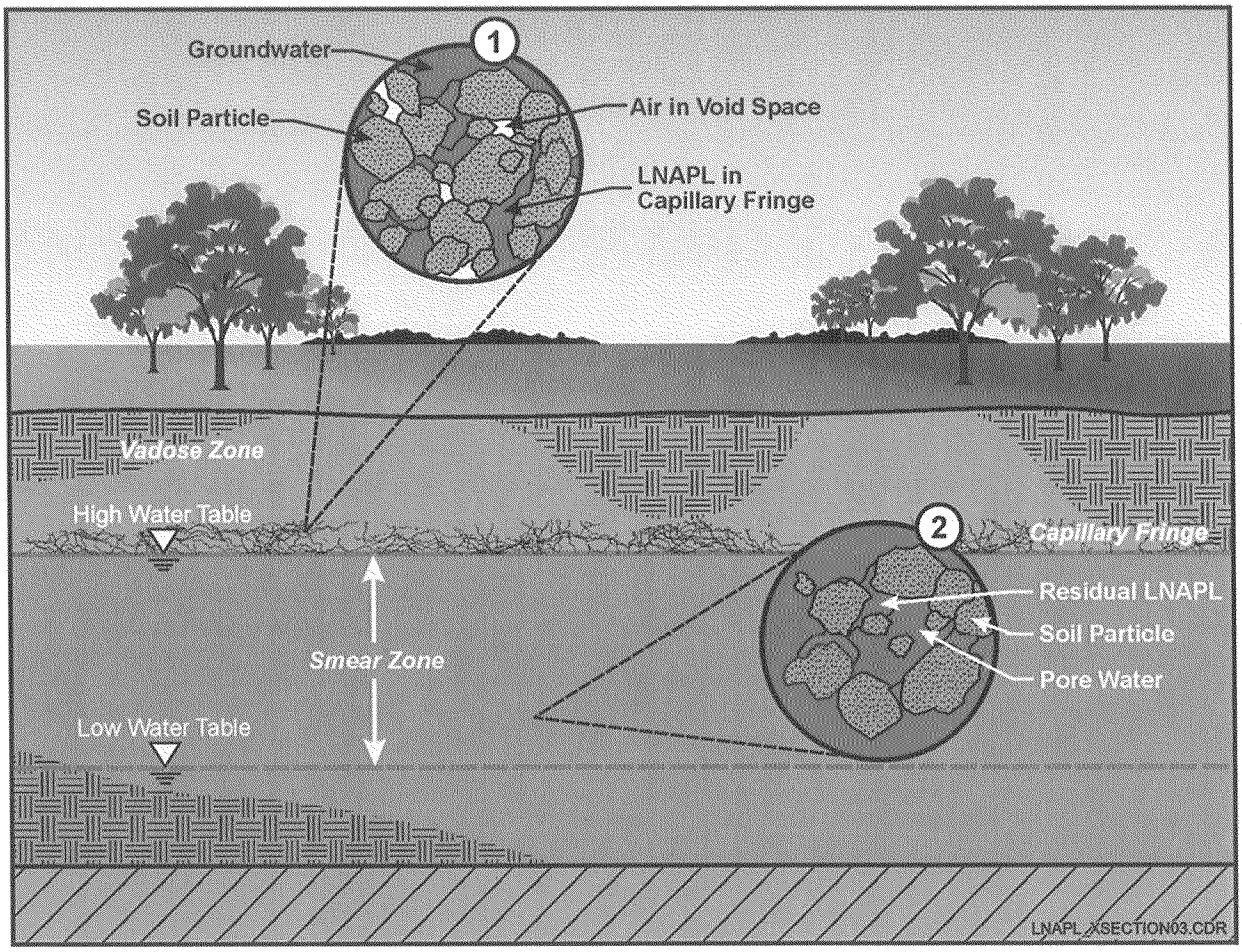
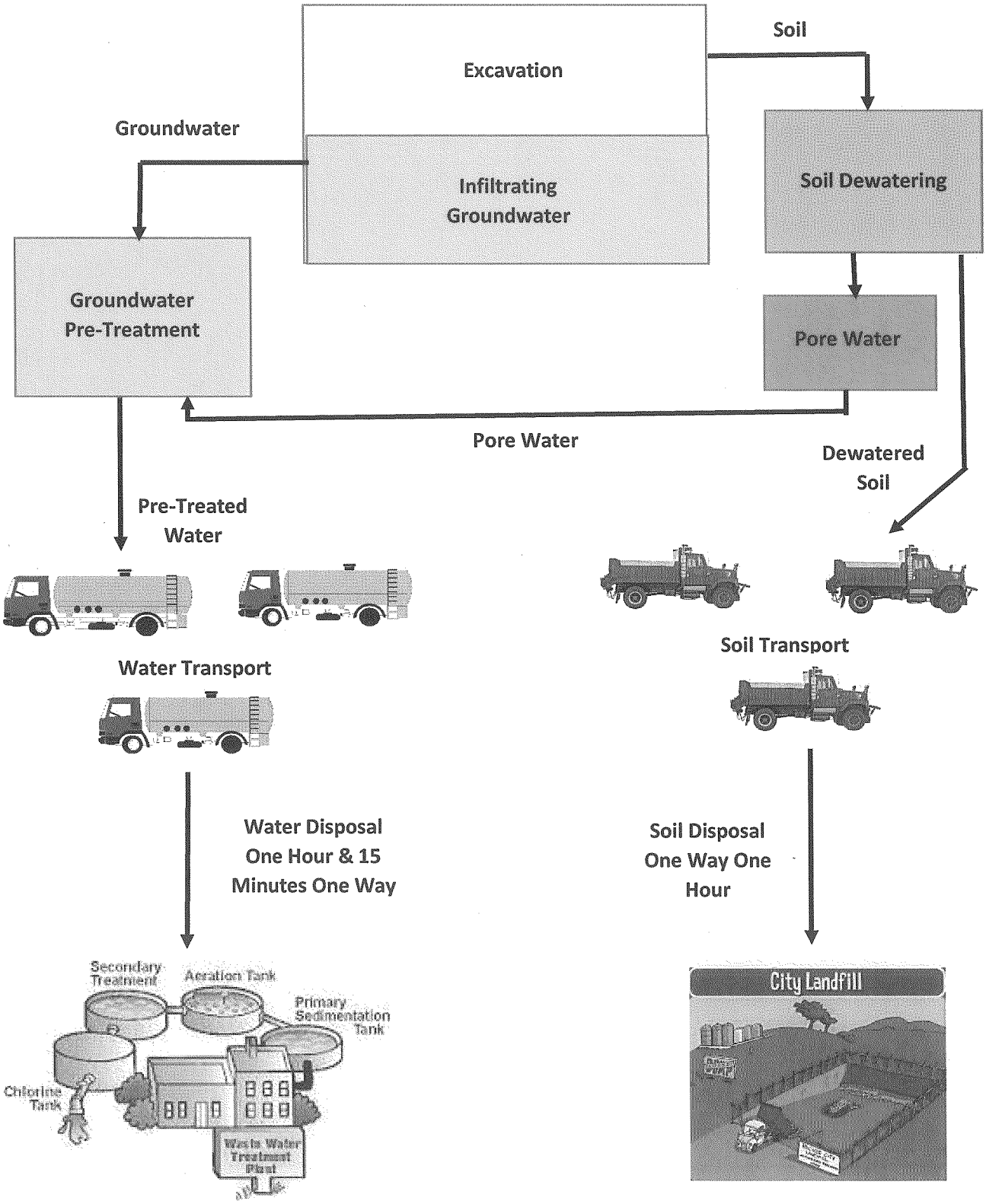
EPA-R5-2017-010506_0000037


Groundwater
1
Soil Particle
Air in Void Space
LNAPL in
Capillary Fringe
Vadose Zone
High Water Table
2
Capillary Fringe
Residual LNAPL
Soil Particle
Pore Water
Smear Zone
Low Water Table
LNAPL_XSECTION03.CDR

Excavation Process



AS/SVE Technology Description

Use Air Sparging and Vapor Extraction to Remediate Subsurface Organics

By M.C. Marley, E.X. Droste, H.H.Hopkins and C.J. Bruel

From *Environmental Management: Wastewater and Groundwater Treatment*

Excerpted from:
In situ air sparging (IAS) is used to remove volatile organic compounds (VOCs) from groundwater aquifers. Conceptually, the standard IAS process is simple — clean air is injected into an aquifer beneath the water table. This induces the mass transfer of VOCs dissolved in groundwater, forcing them into the vapor phase. It also adds oxygen to the groundwater, promoting aerobic bioremediation (Figure 1). By forcing contaminated vapors to migrate from the saturated portions of the aquifer to the vadose (unsaturated) zone above the water table, IAS promotes aquifer remediation by a host of physical, chemical and biological processes.

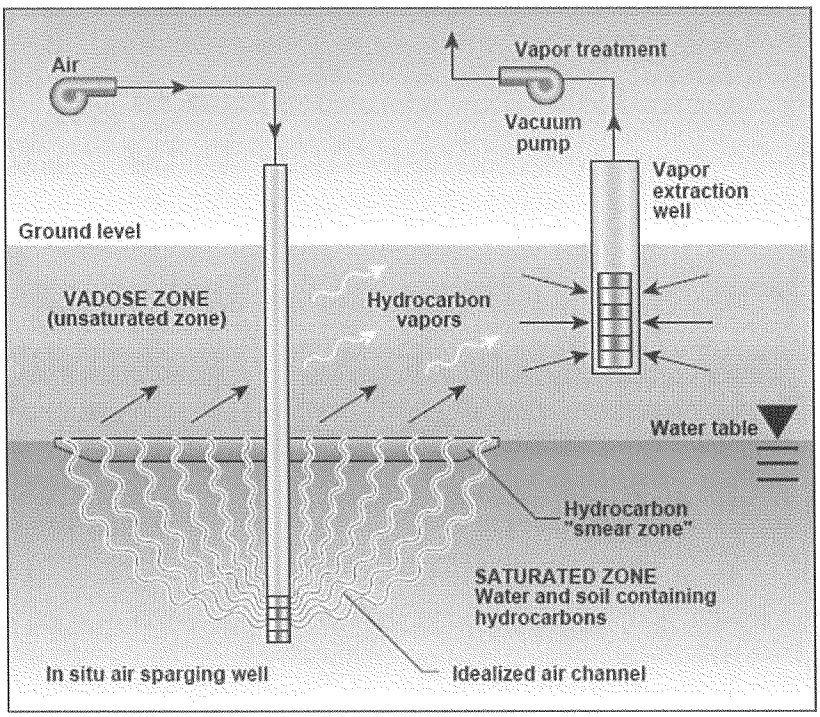


FIGURE 1 (above). By injecting air beneath a groundwater aquifer, air sparging operations can induce aquifer mixing, and promote the volatilization or biodegradataion of dissolved organic contaminants. Vapor-extraction wells then create a vacuum in the subsurface, to direct the flow of liberated vapors to recovery or monitoring wells

To control the potential migration of organic vapors as they move from the aquifer to the vadose zone — or to capture unwanted pollutants for destruction or recycling at the surface — soil vapor extraction (SVE) is often applied in conjunction with IAS [1,2]. In such a setup, vacuum pumps at the surface induce the movement of sparged contaminants to a series of vapor-extraction wells. Vapors collected at the surface are then subjected to any combination of standard ex situ treatment schemes, including carbon adsorption, catalytic oxidation, biofiltration or condensation.